State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii 96813

February 23, 2007

Board of Land and
Natural Resources
Honolulu, Hawaii

REQUEST FOR AUTHORIZATION/APPROVAL TO ISSUE ONE (1) NORTHWESTERN HAWAIIAN ISLANDS (NWHI) RESEARCH PERMIT TO DR. GEORGE ANTONELIS , OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), NATIONAL MARINE FISHERIES SERVICE, VALID FROM MARCH 8, 2007 TO THE END OF APRIL 2007, TO ACCESS SITES IN THE WATERS SURROUNDING FRENCH FRIGATE SHOALS, LAYSAN ISLAND, PEARL AND HERMES ATOLL, AND MIDWAY ATOLL TO CAPTURE AND TAG MONK SEALS, AND TO CONDUCT MONK SEAL AND CETACEAN SURVEYS, FOR THE PURPOSE OF CONTRIBUTING TO THE UNDERSTANDING OF MONK SEAL AND CETACEAN POPULATION DYNAMICS IN THE NWHI

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a NWHI Research Permit to Applicant Dr. George A. Antonelis of NMFS, NOAA, pursuant to the *Hawaii Administrative Rules*, §13-60.5, the *Hawaii Revised Statutes*, § 187A-6, and all other applicable laws and regulations. The Research Permit, described below, will allow activity to occur in the NWHI State marine Refuge (0-3 miles) waters surrounding the following areas:

- French Frigate Shoals,
- Laysan Island,
- Pearl and Hermes Atoll,
- Midway Atoll.

The activities covered under this permit will occur from March 8, 2007 through the end of April 2007, as outlined below and in the attached permit application.

INTENDED ACTIVITIES

These projects will be supported by the NOAA Ship Oscar Elton Sette.

Hawaiian Monk Seals
The temporal scope of the research to be conducted within the NWHI Marine National Monument during the cruise is specified above. The geographic scope of the research is limited

to Pearl and Hermes Atoll and nearby seamounts or other habitats visited by foraging monk seals.

Land-based research: Capture and instrumentation of monk seals will require access to seals on beaches across Pearl and Hermes Atoll. Up to 15 Hawaiian monk seals will be instrumented with Wildlife Computers MK10 Satellite Linked GPS Dive Recorders. These tags will relay monk foraging location and dive information via satellite to researchers in Honolulu. They also archive fine scale dive information that can be downloaded upon recovery of the instrument. Small-craft will be used to transport personnel among islets and will occur virtually daily for the duration of the project at Pearl & Hermes Atoll. When accessing other islets within the lagoon, depending upon conditions, personnel will generally anchor the boats in shallow water adjacent to the islets, bow facing in, with a stern anchor leading offshore and a bow anchor placed on the islet. Researchers will then wade to the shore. Stern anchors will always be placed on a sandy bottom. Researchers will work to keep all activities within the beach zone to minimize any disturbance to other flora and fauna. No work will be conducted at night.

Ocean-based research: GPS locations derived from satellite tags will allow researchers to pinpoint foraging 'hotspots' for individual seals. Researchers will determine the substrate type at these hotspots to help understand fine scale habitat needs of seals. Habitat assessment will be performed by researchers submerging their head or snorkeling in shallow areas. In deeper areas, a video camera mounted to a cable and winch will be dropped to record substrate characteristics. Additional ecosystem sampling will be conducted at seamounts near monk seal foraging sites that have been previously identified as monk seal foraging areas.

The proposed research will better define juvenile monk seal foraging ecology and fine scale habitat needs by comparing foraging behavior and diet of seals across the condition spectrum to see if any observed differences are correlated with seal survival. These data will be compared to juvenile monk seal foraging ecology in the Main Hawaiian Islands. A secondary objective is to supplement population assessment efforts by tagging weanling seals and adults that do not have flipper tags. This will aid in their identification during future field efforts.

Cetacean Research

There are over 20 species of cetaceans inhabiting the waters of the Hawaiian Archipelago, the majority of which are poorly studied, if studied at all, within the Northwestern Hawaiian Islands. This includes several species currently listed as Endangered under the Endangered Species Act or as strategic stocks under the Marine Mammal Protection Act.

The primary purpose of the cetacean research to be conducted during the proposed cruise is to gather information on the abundance, stock structure and distribution of cetaceans in the Northwestern Hawaiian Islands. A sophisticated acoustic recorder will be used determine cetacean abundance and distribution.

Small boat surveys will occur daily for the duration of the project (weather permitting) at Pearl & Hermes Atoll. Data on the location, species, group size and behavior of small cetaceans are collected during each encounter by two observers. Photo-identification activities will be conducted from small boats using Digital Single Lens Reflex (DSLR) cameras and telephoto zoom lenses. Generally, large whales will be approached within approximately 15-20 m. Smaller

animals, such as delphinids, will be approached within approximately 5-10 m. These photographs will be used to estimate abundance, document movements, scarring rates and in some cases (e.g., spinner dolphins) estimate vital parameters such as survival and calving rates. Photo-identification studies are expected to be most useful for island-associated (or otherwise localized) stocks and migratory species exhibiting site fidelity. They are also used for stock identification.

Cetacean biological sample collection will occur opportunistically during small-boat and large-vessel surveys using biopsy sampling (skin/blubber collected by projectile dart) or collection of sloughed skin or feces. No known injuries or other significant effects of this sampling have been observed during the two decades that SWFSC/PIFSC has conducted this type of sampling. Contact with the animals will be limited to approximately 45 minutes during this activity. During any single encounter, no more than five biopsy sample attempts per individual will be made. If signs of harassment such as extreme rapid changes in direction, prolonged avoidance through diving and other behaviors are observed from an individual or a group, the biopsy activities will be discontinued on that individual or group.

REVIEW PROCESS

The permit application was received by the Division of Aquatic Resources on February 1, 2007. It was sent out for review and comment to the following scientific entities: Division of Aquatic Resources staff (5), Northwestern Hawaiian Islands Marine National Monument, NOAA Pacific Islands Regional Office (NOAA-PIRO), and United States Fish and Wildlife Service. Native Hawaiians from the Office of Hawaiian Affairs, and the Kaho'olawe Island Reserve Commission were also consulted.

Comments received from the Scientific Community (DAR, NOAA-PIRO, USFWS, and the NWHI Marine National Monument) are summarized as follows:

1) One reviewer indicated that grouping of two different projects on one permit could cause confusion, and complicate permit reporting requirements. It was suggested that these projects be submitted as two separate permits.
2) Concern was expressed regarding the impact of capturing, handling, tagging, and sampling juvenile monk seals. The reviewer suggested that a limited program that addresses these issues be conducted before larger scale efforts are undertaken.

No comments received from the Native Hawaiian community.

RESPONSE:

1. Although conducting two research projects under a single permit will slightly complicate reporting requirements, this issue will be resolved by NWHI Marine National Monument staff and the respective NOAA researchers.
2. NOAA researchers and National Marine Monument staff were contacted by DAR staff to address concern number two (2) above. An Environmental Assessment (EA) entitled "Environmental Assessment on the Effects of NOAA Fisheries Permitted Scientific

Research and Enhancement Activities on Endangered Hawaiian Monk Seals" was completed in June of 2003. A Finding of No Significant Environmental Impact (FONSI) for these activities was issued on June 10, 2003.

NOAA researchers have conducted numerous meetings and consultations with members of the native Hawaiian community to seek their input and guidance on NWHI monk seal research. PIFSC staff meet with representatives from Kohoolawe Island Reserve Council, Office of Hawaii Affairs, Hawaiian Civic Club of Ka`u, Native Hawaiian Cultural Working Group (former advisory body of the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve); and with traditional practitioners Bob DeMate, Laakea Suganuma, and Kepa Maly.

AMENDMENTS REQUESTED SUBSEQUENT TO APPLICATION SUBMISSION:

On February 12, 2007 the applicant requested that trawl operations be removed from the permit application because the trawl winch on the vessel is not operational.

FINAL STAFF RECOMMENDATIONS:

DAR staff is of the opinion that Applicant has properly demonstrated valid justifications for his application and should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with the following special instructions and conditions, which are in addition to the General Conditions imposed by the Application Guidelines:

1. Direct that Applicant and associated staff shall be briefed on Native Hawaiian cultural traditions and practices at least once a year, and that Applicant shall consider providing additional access for Native Hawaiian cultural studies or practices as appropriate.

2. Direct that the hulls of the support vessel and all tender vessels must be certified and documented free of fouling organisms before each and every cruise to the NWHI. This procedure must be performed prior to each departure from the Main Hawaiian Islands. Inspection records must be immediately submitted to DAR upon request.

3. Allow swimming and snorkeling for authorized personnel and visitors to the NWHI.

4. Direct that all forms of fishing, no matter for subsistence, sustenance, commercial or recreational purposes, are prohibited in State waters.

RECOMMENDATION:

"That the Board authorize and approve, with stated conditions, a Research Permit to Dr. George A. Antonelis of the National Oceanic and Atmospheric Administration, for activities and access within the State waters of the NWHI for the purpose of cetacean and monk seal research.

Respectfully submitted,

DAN POLHEMUS
Administrator

APPROVED FOR SUBMITTAL

PETER T. YOUNG
Chairperson

Department of Land and Natural Resources
Northwestern Hawaiian Islands Permit Application Review

Permit Type: Management ☐ Recreation ☐ Research ☒
Education ☐ Cultural ☐ Special Ocean Use ☐

Working Title: Permit for Antonelis of NOAA National Marine Fisheries Service, from March 8, 2007 to the end of April 2007, to capture and tag monk seals, and to conduct monk seal and cetacean surveys, for the understanding of monk seal and cetacean population dynamics in the NWHI

Project Applicant: _NOAA, NMFS, PIFSC_ **Principle Investigator**: Dr. George Antonelis

Project Location(s) *(Both State Waters and Monument)*: ___French Frigate Shoals, Laysan Island, Pearl and Hermes Atoll, Midway Atoll._____

Project Dates and Duration: _March 8, 2007 through end of April 2007

Project Précis & Background *(Summary of project and why this is proposed)*:

The proposed research will better define juvenile monk seal foraging ecology and fine scale habitat needs by comparing foraging behavior and diet of seals across the condition spectrum to see if any observed differences are correlated with seal survival. A secondary objective is to supplement population assessment efforts by tagging weanling seals and adults that do not have flipper tags. This will aid in their identification during future field efforts. The tertiary objective is to gather information on the abundance, stock structure and distribution of cetaceans in the Northwestern Hawaiian Islands. A sophisticated acoustic recorder will be used determine cetacean abundance and distribution.

Are there other relevant permits that have/will be issued with regard to this project? **Yes** ☒
(e.g. Monument /FWS permit; Marine Mammal Protect Act permit, IACUC) **No** ☐

What is the relevance to management and/or the improved understanding of NWHI & MHI?

This research is driven by a federal mandate to promote stock recovery for listed threatened and endangered species, protect their habitat, and report on marine mammal stock structure

Could work be conducted outside the NWHI?: Yes ☐ **No** ☒

Explain: Hawaiian Monk Seals are found largely within the monument. Additionally, little is known of the stock structure of cetaceans which occur within the monument

Has Applicant been granted a permit from the State in the past? Yes ☒ **No** ☐
If so, please summarize past permits:

DLNR.NWHI06RA001 was issued to Applicant on April 3, 2006, and DLNR.NWHI06R016 on June 9, 2006. Applicant is in full compliance on all terms.

Have there been any a) violations: Yes ☐ **No** ☒ **b) late/ incomplete reports: Yes** ☐ **No** ☒
Any other relevant concerns from previous permits?_____

Recommendations:
DAR Staff: Approve this permit application ☒ Reject this permit application ☐
NH CWG: Approve this permit application ☐ Reject this permit application ☐
Additional Comments:

Northwestern Hawaiian Islands Marine National Monument

Permit Application

NOTE: ***This Permit Application (and associated Instructions) are for activities to be conducted in the Northwestern Hawaiian Islands Marine National Monument, including Hawaiian Islands National Wildlife Refuge, the Midway Atoll National Wildlife Refuge, Battle of Midway National Memorial, Northwestern Hawaiian Islands State Marine Refuge, Kure Atoll Hawaii State Seabird Sanctuary, and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, please provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historical and cultural resources of the NWHI Marine National Monument (Monument).***

Summary Information

Applicant name: **Dr. George "Bud" Antonelis, National Marine Fisheries Service**

Permit categories:
☒ Research – Please fill out Sections A-D (as applicable) and Appendix A
☐ Conservation and Management - Please fill out Sections A-D (as applicable) and Appendix A
☐ Education - Please fill out Sections A-D (as applicable) and Appendix B
☐ Native Hawaiian Practices - Please fill out Sections A-D (as applicable) and Appendix C
☐ Recreation (Midway ONLY) - Please fill out Sections A-D (as applicable) and Appendix D
☐ Special Ocean Use - Please fill out Sections A-D (as applicable) and Appendix E

Briefly describe permit activity:

☐ This application is for a RENEWAL of an existing permitted project.
☒ This application is for a NEW project.

When will the activity take place?
From: March 8, 2007 To: April 10, 2007

NOTE: INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED
Please Send Permit Applications to:
NWHI Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
Hoku.johnson@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

NOTE: SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, PLEASE SEE PG 7.

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): **Antonelis, George, A.**

Title: Chief, Protected Species Division, PIFSC, NOAA Fisheries

2. Mailing address (street/P.O. box, city, state, country, zip):

Phone: **808-983-5718**

Fax: **808-983-2902**

Email: **bud.antonelis@noaa.gov**

For students, major professor's name, telephone and email address:

3. Affiliation (institution/agency/organization directly related to the proposed project):

Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC

4. Additional persons to be covered by permit:

Dr. Dave Johnston (Primary Contact for Cetacean Enquiries)
Cetacean Biologist
Joint Institute of Marine and Atmospheric Research, University of Hawaii.
Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC
T: 808-983-5398
E: dave.johnston@noaa.gov

Dr. Charles Littnan (Primary Contact for Monk Seal Enquiries)
Hawaiian Monk Seal Foraging Ecologist
Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC
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Marie Chapla
Aquatic Farms/Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC
T: 808-983-5339
E: marie.chapla@noaa.gov

Additional members of the field team will be provided to the Monument as soon as we have confirmation of their participation.

Section B: Project Information

5a. Project location(s):

☐ Nihoa Island	☐ Land-based	☐ Ocean-based
☐ Necker Island (Mokumanamana)	☐ Land-based	☐ Ocean-based
☒ French Frigate Shoals	☐ Land-based	☒ Ocean-based
☐ Gardner Pinnacles	☐ Land-based	☐ Ocean-based
☐ Maro Reef		
☒ Laysan Island	☐ Land-based	☒ Ocean-based
☐ Lisianski Island, Neva Shoal	☐ Land-based	☐ Ocean-based
☒ Pearl and Hermes Atoll	☒ Land-based	☒ Ocean-based
☒ Midway Atoll	☐ Land-based	☒ Ocean-based
☐ Kure Atoll	☐ Land-based	☐ Ocean-based
☐ Other		

NOTE: Please note there is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:
Hawaiian monk seal research

All monk seal surveys and captures will take place within Pearl and Hermes Atoll (centered at approximately W-175.90 &N27.80) including the islets of North, Little North, Southeast, Grass and Seal-Kittery. Captures will be primarily on the beach. A subset of foraging locations derived from GPS tags will be used to identify areas for habitat assessment (camera drops or snorkel surveys to identify substrate). Since the locations will be determined by the seals themselves, it is difficult to predict the location of habitat surveys. Most of the habitat assessment effort will be within the atoll or at neighboring shelf, slopes and seamounts.

Cetacean research
Cetacean research will be conducted at the following locations:

- While underway during transits between Honolulu and Pearl & Hermes Reef.
- In the region surrounding the summit of Ladd Seamount located at approximately –W-176.67 & N28.49
- Within the lagoon waters of Pearl & Hermes Atoll

5b. Check all applicable regulated activities proposed to be conducted in the Monument:
☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource
☐ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
☒ Anchoring a vessel
☐ Deserting a vessel aground, at anchor, or adrift
☐ Discharging or depositing any material or matter into the monument

☐ Touching coral, living or dead
☐ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the monument
☐ Attracting any living monument resource
☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
☐ Subsistence fishing (State waters only)
☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6. Purpose/Need/Scope *State purpose of proposed activities:*

Hawaiian Monk Seals

The Hawaiian monk seal (*Monachus schauinslandi*) is endemic to the Hawaiian Archipelago. It resides principally at six breeding colonies in the NWHI, with a smaller, but apparently increasing, sub-population in the MHI. Total population size was estimated around 1,200 to 1,300 seals in 2005.

The Hawaiian monk seal was designated as *endangered* under the Endangered Species Act in 1976 owing to a decline in abundance of around 50% between the late 1950s and the early 1970s. In response to that substantial decline, the Marine Mammal Commission (MMC), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) initiated a program to discover and mitigate the factors affecting population vitality. A Species Recovery Plan was subsequently completed in 1983 and modified in 2005. The principal factor contributing to the current decline and lack of recovery of the species has been identified as poor survival of juveniles, evidently owing to poor foraging success.

The foraging behavior of juvenile monk seals has been investigated using satellite tags, time-depth recorders, and Crittercam technology. Diet has been assessed using both scat and fatty acid analyses. However, much of the knowledge is based on animals studied at a single point in time and at the higher end of the fitness spectrum. In other words, much is known about the behavior of successful individuals and nothing on juveniles that 'fail to thrive'.

Purpose: The proposed research will better define juvenile monk seal foraging ecology and fine scale habitat needs by comparing foraging behavior and diet of seals across the condition spectrum to see if any observed differences are correlated with seal survival. These data will be compared to juvenile monk seal foraging ecology in the Main Hawaiian Islands. A secondary objective is to supplement population assessment efforts by tagging weanling seals and adults that do not have flipper tags. This will aid in their identification during future field efforts.

Need: One of the principal factors contributing to the current decline and lack of recovery of Hawaiian monk seals is low juvenile survival, evidently owing to poor foraging success. The continued population decline at several locations and the cessation of increases at others has prompted calls from the Marine Mammal Commission, Hawaiian Monk Seal Recovery Team (HMSRT) and others for urgently needed research to explicitly link survival to prey abundance, foraging behavior, diet and condition of juveniles. This research supports the conservation mandates of the Endangered Species Act and Marine Mammal Protection Act.

Scope: The temporal scope of the research to be conducted within the NWHI Marine National Monument during the cruise is specified below. The geographic scope of the research is limited to Pearl and Hermes Atoll and nearby seamounts or other habitats visited by foraging monk seals.

Cetacean Research
There are over 20 species of cetaceans inhabiting the waters of the Hawaiian Archipelago, the majority of which are poorly studied, if studied at all, within the Northwestern Hawaiian Islands. This includes several species currently listed as Endangered under the Endangered Species Act or as strategic stocks under the Marine Mammal Protection Act.

Surveys of cetaceans have occurred almost exclusively in and around the Main Hawaiian Islands and a single NMFS large vessel cruise in 2002 remains the only dedicated survey effort for pelagic cetaceans in the NWHI. As well, studies of the social structure and genetic profile of spinner dolphin populations at Midway, Pearl and Hermes Atoll, and FFS have been conducted by various universities (e.g. Andrews et al. 2005), yet there are currently no reliable abundance estimates for dolphins at Pearl & Hermes Reef.

Purpose: The primary purpose of the cetacean research to be conducted during the proposed cruise is to gather information on the abundance, stock structure and distribution of cetaceans in the Northwestern Hawaiian Islands. A sophisticated acoustic recorder will be used determine cetacean abundance and distribution but also support a secondary purpose of the proposed cruise. Specifically we will assess the utility of deploying passive acoustic recorders within offshore portions of the Monument to monitor the presence of ship traffic and fishing activities.

Need: This research is required to meet stock assessment mandates as set out under the U.S. MMPA, where NMFS is reponsible for conducting quantitative population assessments for each stock of cetaceans inhabiting the waters of the U.S. EEZ. This includes large vessel visual/acoustic line transect surveys for pelagic cetaceans, ship-based ecosystem observations to provide an ecological context for cetacean sightings and capture/recapture photo-identification studies of pelagic cetaceans and resident spinner dolphins at Pearl & Hermes Reef. As well, this research will gather baseline information on the presence and seasonality of cetaceans within the newly formed Northwestern Hawaiian Islands Marine National Monument through passive acoustics. These data will be integral for managing human effects on cetaceans within the monument. Finally, due to the remote nature of the monument, monitoring for unpermitted/unregulated ship and fishing vessel traffic. This cruise will provide baseline information on how useful passive acoustics are for monitoring ship traffic in the offshore regions of the Monument

Scope: The temporal scope of the research to be conducted within the waters of the NWHI Marine National Monument during the cruise is specified below. The geographic scope of the research is limited to the area visually and acoustically surveyed (within 10km of the ship's trackline) during large vessel surveys, and within the protected waters of the the lagoon at Pearl & Hermes Reef for the spinner dolphin photo-identification project.

7. As explained further in the instructions, please provide any information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historical and cultural resources of the Monument:

Hawaiian monk seal research
The ultimate goal of the work described here is to assist in the recovery of the Hawaiian monk seal, a goal that is shared with Monument mandates. We strive to conduct research that is compatible with the conservation and management goals of the Monument and minimizes disturbance to the NWHI ecosystem.

The work proposed here must be conducted within the Monument. Monk seals are endemic to the Hawaiian Archipelago with seals found in both the NWHI and MHI, however these two sub-populations demonstrate differences in demography and the condition of individuals.
In general, demographic trends observed within the NWHI monk seal population indicate that food limitation may be playing a primary role in regulating population growth. Declines have been observed in the beach count abundance index and in some cases these changes in abundance are preceded by, or simultaneous with, reduced juvenile survival. There are indications that relatively poor body condition in various age classes is associated with declining populations and these factors are consistent with either episodic or chronic prey limitation.
A strongly contrasting situation exists in the MHI. While juvenile survival rates there are unknown, MHI pups wean at very large size (average girth and length exceeds the 95th percentile observed in the NWHI), and, notably, animals appear to be in good physical condition across all age and sex classes. This suggests that monk seals at the MHI are not food limited. Studies of monk seal foraging ecology similar to the project proposed here are being conducted in the MHI to compare and contrast across the Archipelago. It is critical to understand monk seal foraging in the apparently resource limited NWHI.

Our studies are designed to minimize impacts to the terrestrial and marine environment. For instance, we have allotted approximately two weeks for instrument deployment, during which time we will have land-based camps. During our time on island we will be following strict quarantine protocols defined by USFWS and restrict our movements to the beach area, avoiding potential disturbance to bird and plant life on the island interiors. After the final tag deployment, NMFS monk seal researchers will arrange to return to the NOAA R/V Oscar Elton Sette thereby reducing any human disturbance to terrestrial habitats and species.

The Hawaiian monk seal research program has a long history of successful research and partnership with the agencies in charge of managing the Monument. Every member of the monk seal research team has experience working in the NWHI and familiar with the best practices to minimize impact on the NWHI ecosystem.

Cetacean Research
The cetacean research proposed for this cruise will pose no threats to the ecological integrity of the Monument and can be conducted safely, for both humans and animals. Indeed, very little is known about the seasonality of cetaceans within the monument, including endangered species such as blue whales, fin whales, sperm whales and north Pacific right whales. This research will provide valuable information for the future management human activities within the Monument and is consistent with the monument proclamation and the President's Ocean Action Plan.
Considering the lack of knowledge regarding cetaceans in the NWHI, and the current needs for remote vessel monitoring within the Monument, there are no practical alternatives to conducting this research outside of the Monument.

The Chief Scientist and cetacean research PI (Johnston) is highly qualified to conduct and complete the proposed research activities. Dr. Johnston has significant expertise in both small boat and large ship cetacean surveys (and has published several papers on these topics in the primary literature) and has acted as Chief Scientist or Cruise Leader on NOAA cruises as well as on cruises conducted about research vessels run by academic institutions. The cruise is fully funded. All cetacean research activities have been conducted successfully on previous occasions in locations outside of the Monument.

8. Procedures:

Hawaiian monk seal research

Land-based research: The techniques used by the monk seal program are used by many programs worldwide and satisfy University of Hawaii Institutional Animal Care and Use Committee standards and adhere to the draft guidelines for animal handling created by the Society for Marine Mammalogy. Juvenile monk seals will be located within Pearl and Hermes reef and their suitability for instrumentation assessed. Juvenile seals will undergo a subset of the following procedures depending on their condition and extrinsic factors such as temperature, potential for disturbance of other species and surrounding habitat:

A. Encounter. This involves observing seals from a distance.

1. Observe behavior, either visually or with a camera.

2. Record presence, age/sex, health status, either visually or with a camera.

B. Capture. This involves the actual handling of individual seals.

1. Capture using gear on the beach, such as a hoop net, or stretcher net.

2. Capture of live seals will include sedation with valium depending on procedures being conducted (health screening and instrumentation).

C. Inspect. This involves handling and manipulating the individual seals after capture.

1. Measure for size.

2. Weigh.

3. Determine sex.

4. Conduct external exam for health status.

5. Conduct exam for external injuries, such as evidence of attempted predation, fishing line entanglement, or other.

6. Record existence of and information from tag(s).

D. Sample. This involves handling and taking physical samples from individual seals, alive and dead, after capture.

1. If animal is alive, in addition to the external inspections above, the following may be collected:

a. Blood samples for total protein, packed cell volume, serum chemistry, and/or parasites and other desired considerations. Samples are also used by the monk seal Health and Disease Program.

b. Skin or blood for DNA identification and stable isotope analysis.

c. Fecal, nostril, eye, and genital swabs for health and disease screening.

d. Blubber biopsy for fatty acid and contaminant analysis.

2. If the animal is dead, during external exam and/or necropsy, in addition to the above samples (other than blood), the following may be collected:

a. Food from gastrointestinal tract.

b. Feces.

c. Skeletal materials.

d. Skin or other tissue for DNA identification, stable isotope or other analyses.

E. Tag. This involves placing or removing a physical tag either into tissue of the flipper, under the skin surface, or affixed to the fur of the individual seal.

1. Passive tags:

a. External flipper tag (plastic);

b. Passive Integrated Transponder (PIT) tag injected under the skin that can then be electronically scanned;

c. Bleach mark or epoxy resin on the fur (alphanumeric identification bleached white or black)

2. Active Tags: Transmitters and Archival tags are attached to the dorsal pelage using a low exothermic epoxy resin.

a. Radio transmitter that either transmits globally using satellites or short-range using VHF frequencies attached to the fur. The tags used for this study will include a small VHF transmitter and a GPS Satellite linked dive recorder which will provide GPS quality foraging locations and dive behavior;

b. Archival tag (collects and stores temperature, depth, time, and/or location data)

Capture and instrumentation of monk seals will require access to seals on beaches across Pearl and Hermes Atoll. Up to 15 Hawaiian monk seals will be instrumented with Wildlife Computers MK10 Satellite Linked GPS Dive Recorders. These tags will relay monk foraging location and dive information via satellite to researchers in Honolulu. They also archive fine scale dive information that can be downloaded upon recovery of the instrument. Whalers will be used to transport personnel among islets and will occur virtually daily for the duration of the project at Pearl & Hermes Atoll. When accessing other islets within the lagoon, depending upon conditions, personnel will generally anchor the boats in shallow water adjacent to the islets, bow facing in, with a stern anchor leading offshore and a bow anchor placed on the islet. Researchers will then wade to the shore. Stern anchors will always be placed on a sandy bottom. Researchers will work to keep all activities within the beach zone to minimize any disturbance to other flora and fauna. No work will be conducted at night.

Ocean-based research: GPS locations derived from satellite tags will allow researchers to pinpoint foraging 'hotspots' for individual seals. Researchers will determine the substrate type at these hotspots to help understand fine scale habitat needs of seals. Habitat assessment will be done by researchers submerging their head or snorkeling in shallow areas. In deeper areas, a video camera mounted to a cable and winch will be dropped to record substrate characteristics. Additional ecosystem sampling will be conducted at seamounts near monk seal foraging sites that have been previously identified as monk seal foraging areas. This biological sampling is described below.

Data Use: The instruments being deployed will provide the PIs with information on the dive behavior and foraging locations of juvenile Hawaiian monk seals. Blubber and other tissue samples will provide information on the diet and trophic position of each individual. This information on diet and foraging effort coupled with other parameters such as body condition, health status, and survival, will allow us to determine what habitats and food items are important to juvenile monk seals and explore what particular factors (i.e. diet or behavior), or combination of factors, allow some individuals to survive while others do not. These data will be compared to similar data being collected in the Main Hawaiian Islands.

Cetacean research

Large Vessel Surveys: Data are collected during research vessel surveys using line-transect methodology for the estimation of population abundance by species/stock. The following methods (including the configuration of the large vessel observation platform) are designed to match those used by the Southwest Fisheries Science Center Protected Resources Division to maximize the

comparability of scientific data collected by both Centers, which have overlapping responsibilities for cetacean research in the Pacific.

In general, the following protocol is used on PIFSC research vessel surveys. The vessel traverses predetermined tracklines within the study area at a constant speed (usually 10 knots). Marine mammal observers stationed on the flying bridge deck of the vessel search the area from directly ahead to abeam of the ship using pedestal-mounted 25X150 binoculars. Data on sea state, visibility, glare, observer, etc. are recorded at regular intervals for subsequent distance sampling analysis. At times, depending on the species sighted and the data collecting priorities at the time, the vessel may turn off the trackline and approach marine mammals to confirm species identification and to make group size estimates. Concurrent with these visual observations, small boats may be launched to collect biological samples (skin/blubber biopsy or sloughed skin or feces) and digital photographs (skin/blubber biopsy samples and photographs may also be collected from the main vessel). Typically, synoptic acoustic monitoring using an acoustic array towed behind the large vessel will be used to aid in detection, localization and identification of cetaceans.

Concurrent ecosystem sampling will be conducted with expendable bathythermograph (XBT) probes (in offshore waters only), conductivity-temperature depth (CTD) casts, additionally equipped with a Seapoint profiling fluorometer, a Biospherical Instruments scalar irradiance (PAR) sensor, redundant dissolved oxygen sensors, and a 10- Niskin water bottle carousel rosette sampler. Sea surface temperature and salinity measurements will be collected using a hull-mounted thermosalinograph (TSG) continuously throughout the sampling regime. Acoustic surveys measuring biological backscatter and current velocity and direction will be conducted simultaneously along transect lines using a Simrad EK60 echosounder system and an acoustic Doppler current profiler (ADCP), respectively. In addition to acoustic prey-field sampling, micronekton voucher samples will be collected at the Ladd Seamount location and the un-named seamount southwest of PHR using dual warp Cobb (Stauffer) trawls targeted on subsurface (and NOT benthic) prey layers identified through acoustic methods. The duration of each trawl will no exceed 30 minutes @ 5 knots. Prey field samples will include various small fishes (primarily myctophids), crustacean, cnidarian and cephalopod (primarily squid) species (to be identified onboard and/or after the cruise) and each trawl will not collect samples greater than 2L wet volume. This will amount to <25 trawl samples for the entire cruise. All samples will be archived at the PIFSC/Bishop Museum and elsewhere at the Monument's request.

Small boat surveys occur daily for the duration of the project (weather permitting) at Pearl & Hermes Atoll**.** Data on the location, species, group size and behavior of small cetaceans are collected during each encounter by two observers. Survey tracklines will not be static nor developed a priori, but rather "bumbling" surveys that cover accessible dolphin habitat at PHR will be conducted. Photo ID and biopsy samples will be collected during each small boat survey as outlined below.

Photo-identification activities are primarily conducted from small boats. When photographs are taken from boats with Digital Single Lens Reflex (DSLR) cameras and telephoto zoom lenses, the animals will be approached closely enough to optimize photographic quality (i.e., well-focused images, utilizing at least one half of the frame where possible). These activities could result in Level B harassment. Distance for optimal approach varies with the species being photographed. Generally, large whales will be approached within approximately 15-20 m. Smaller animals, such as delphinids, will be approached within approximately 5-10 m. Photographs of bow-riding animals will also be taken on an opportunistic basis from large or small vessels and these animals will approach the vessel on their own. These photographs will be used to estimate abundance, document movements, scarring rates and in some cases (e.g., spinner dolphins) estimate vital parameters such as survival and calving rates. Photo-identification studies are expected to be most useful for island-associated (or otherwise

localized) stocks and migratory species exhibiting site fidelity. They are also used for stock identification. Photo-identification of adult and juvenile males and females will occur. If the opportunity arises, females accompanied by calves may be approached for photo-identification, but efforts will cease immediately if there is any evidence that the activity may be interfering with pair bonding, nursing, reproduction, feeding or other vital functions.

Cetacean biological sample collection will occur opportunistically during small-boat and large-vessel surveys using biopsy sampling (skin/blubber collected by projectile dart) or collection of sloughed skin or feces. No known injuries or other significant effects of this sampling have been observed during the two decades that SWFSC/PIFSC has conducted this type of sampling. Contact with the animals will be limited to approximately 45 minutes during this activity. During any single encounter, no more than five biopsy sample attempts per individual will be made. If signs of harassment such as extreme rapid changes in direction, prolonged avoidance through diving and other behaviors are observed from an individual or a group, the biopsy activities will be discontinued on that individual or group. The animals to be sampled will either approach the vessel on their own, be approached by the main research vessel during normal survey operations, or be approached by a small boat deployed from the main vessel. The projectile biopsy sample will be collected from animals within approximately 5 to 30m of the bow of the vessel or small boat (Palsbøll *et al.* 1991). For small cetaceans, the tissue sampled is a small plug of skin and blubber, approximately 5 to 7mm in diameter and 10 to 20mm long. It is collected from the area behind the blowhole and in front of or behind the dorsal fin using a crossbow and cetadart bolts, or darts fired from a PAXARMS rifle. The depth of the biopsy tip is controlled by a cushioned foam stop (25mm in diameter). For large cetaceans, small samples (<1 gram) will be obtained from free-ranging individuals using a using a crossbow and biopsy darts with a stainless steel tip measuring approximately 4 cm in length with an external diameter of 9mm and is fitted with a 2.5 cm stop to ensure recoil and prevent deeper penetration. Between sample periods, the biopsy tips are thoroughly cleaned and sterilized with bleach. Biological samples may be collected from adults and juveniles but not calves.

High frequency acoustic recording package (HARP) deployment will occur at or near the summit of Ladd Seamount in 100 to 400m of water (location detailed above). These devices have an extremely high sampling rate (up to 200 kHz) along with large data storage capacity (over 1 terabyte of data storage) and an extremely long deployment life (over a year). The package will be deployed over the side of the ship. Communications with the HARP are conducted through an acoustic modem. The unit is recovered at the surface by triggering an acoustic release to drop ballast (4 metal plates) and will be recovered on a subsequent cruise. Recordings of cetacean sounds will be examined to provide details on when marine mammals are proximate to Ladd Seamount, as well as assessing the effects of time of day and season on cetacean calling rates in the region. Analysis will be conducted with a variety of software packages designed for acoustic analysis (*e.g.* Raven from Cornell University) as well as MATLAB routines for automatically identifying species of cetaceans.

Section C: Logistics

9. Other permits (list and attach documentation of all other related Federal or State permits):

Monk seal monitoring is authorized by Scientific Research and Enhancement Permit 848-1695-02, issued by the NMFS Office of Protected Resources. Cetacean monitoring and sampling is authorized by Scientific Research Permits 782-1719 and 774-1714. Copies of these are attached.

9a. For each of the permits listed, please identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Please explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation.

No violations or suspensions of the above permits have occurred. Permit 848-1695-02 represents the twice-modified version of a permit originally issued as 848-1695. The two modifications were to include the Hawaiian monk seal captive care ('Second Chance') project at French Frigate Shoals, and later to change the venue of said project from FFS to Midway.

10. Funding sources (Please attach copies of your budget, specific to proposed activities under this permit and include funding sources. Please see instructions for more information):
All funding from Department of Commerce – NOAA Fisheries.

11. Time frame:
Activity start: **March 8, 2007**
Activity completion: **December 31, 2012**

Dates actively inside the Monument:
From: **March 9, 2007**
To: **April 9, 2007**
***** (MK10 GPS tags will be recovered opportunistically during monk seal population monitoring camps May – August, pending award of permit)**

Please describe any limiting factors in declaring specific dates of the proposed activity at the time of application:

The dates above and below are based on the current NMFS PIFSC cruise schedule. However, due to issues with the federal budget continuing resolution and other restraints on ship time, these dates may be shifted or canceled entirely. The applicants will update the Co-Trustees if the dates change.

Personnel schedule in the Monument:
Hawaiian monk seal research:

Charles Littnan, Jessie Lopez, Robert Braun, Jason Baker:	NOAA R/V OES – Mar. 8 – 15
	Pearl and Hermes – Mar. 15 - 29
	NOAA R/V OES – Mar. 29 – Apr. 12

Cetacean research:

Marie Chapla, Chad Yoshinaga, TBD, TBD:	NOAA R/V OES – Mar. 8 – 15
	Pearl and Hermes – Mar. 15 – Apr. 3
	NOAA R/V OES – Apr. 3 – Apr. 12

12. Please indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument:

13. Please check the appropriate box to indicate how personnel will enter the Monument:

☒ Vessel
☐ Aircraft

Provide Vessel and Aircraft information:

NOAA R/V Oscar Elton Sette

14. What certifications/inspections do you have scheduled for your vessel? Please fill in scheduled date (attach documentation):

☐ Rodent free, Date:
☐ Tender vessel, Date:
☐ Ballast water, Date:
☐ Gear/equipment, Date:
☐ Hull inspection, Date:

15. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):
Vessel name:
Vessel owner:
Captain's name:
IMO#:
Vessel ID#:
Flag:
Vessel type:
Call sign:
Embarkation port:
Last port vessel will have been at prior to this embarkation:
Length:
Gross tonnage:
Total ballast water capacity volume (m3):
Total number of ballast water tanks on ship:
Total fuel capacity:

Total number of fuel tanks on ship:
Marine Sanitation Device:
Type :

How will you comply with the 'No Discharge' regulations stipulated in Presidential Proclamation 8031? Describe in detail. If applicable, please attach schematics of the vessel's discharge and treatment systems:

Other fuel/hazardous materials to be carried on board and amounts:

Please provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Please provide the name and contact information of the contractor responsible for installing the VMS system. Please also describe unit name and type:

VMS Email:
Inmarsat ID#:

16. Tender information:
On what workboats (tenders) will personnel, gear and materials be transported within the Monument? Please list the number of tenders/skiffs aboard and specific types of motors:

Section D: Additional Information for Land Based Operations

17. Proposed movement of personnel, gear, materials, and, if applicable, samples:
Transportation of gear to and from Southeast Island (Pearl and Hermes Atoll): Whalers and tenders from the NOAA R/V OES will be used to transport gear and personnel from the research vessel to Southeast Island.

Small boat operations: Whalers will be used to transport personnel among islets at Pearl and Hermes Atoll for the purpose of locating and instrumenting Hawaiian monk seals and conducting cetacean surveys. Boat operations will occur virtually daily for the duration of the project at Pearl & Hermes Atoll. At night, boats will be anchored in nearshore waters of Southeast Island. When accessing other islets within the lagoons, depending upon conditions, personnel will generally anchor the boats in shallow water adjacent to the islets, bow facing in, with a stern anchor leading offshore and a bow anchor placed on the islet. Stern anchors will always be placed on a sandy bottom. If conditions preclude safely anchoring the boat while accessing the islets, one observer will remain in the small boat as coxswain and will stay on station away from the islet while co-workers census/instrument seals.

Significant Transportation Events (estimated):
Mar 10 Arrive FFS. Deliver USFWS equipment if weather permits.
Mar 11 Depart FFS. Transit to LAY.
Mar 13 Arrive LAY. Deploy USFWS personnel.
Mar 13 Depart LAY; transit to PHR.
Mar 15 Deploy monk seal and cetacean teams at PHR.
Mar 15 Depart for Midway (MDY). Embark Braun (Veterinarian).
Mar 16 Depart MDY; transit to PHR.

Mar 17 At PHR, disembark Braun. Depart PHR; transit to Ladd Seamount.
Mar 18 High-frequency Acoustic Recording Package (HARP) deployment at Ladd Seamount.
Mar 18–28 Standard cetacean observations (see below) proximate to HARP deployment location. Oceanographic and benthic mapping proximate to HARP deployment site.
Mar 29 Recover Monk Seal Research Team.
Apr 2 Transit to MDY. Disembark Littnan and Braun. Depart MDY to PHR
Apr 3 Recover PHR Cetacean Team. Depart PHR; transit LAY.
Apr 4 Resupply at LAY. Continue if needed.
Apr 4 Depart Laysan; transit FFS.
Apr 7 Resupply at FFS if needed.
Apr 7 Depart FFS; transit to Honolulu

18. Room and board requirements on island:

Temporary facilities will be set up on Southeast Island to support 8 field staff working at Pearl and Hermes Atoll. The temporary camp will be constructed in the same area as summer monk seal field camps. Four small 2-man 3 season tents will be used for sleeping and two larger canvas tents will be used for a kitchen and office/laboratory. Bathing will occur in the water near camp and environmentally safe biodegradable soap will be used.

19. Work space needs:

All food, water and energy needs will be provided for by NOAA Fisheries. This will include a small solar panel system to provide power to charge batteries and run computers and other communication equipment.

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct.

Jan Butler, for GAA 2/15/07

Signature Date

PLEASE SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

NWHI Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

- ☐ Applicant CV/Resume/Biography
- ☐ Electronic and Hard Copy of Application with Signature
- ☐ Map(s) or GPS point(s) of Project Location(s), if applicable
- ☐ Funding Proposal(s)
- ☐ Funding and Award Documentation, if already received
- ☐ Documentation of Insurance, if already received
- ☐ Documentation of Inspections
- ☐ Documentation of all required Federal and State Permits or applications for permits
- ☐ Statement of information you wish to be kept confidential

Appendix A: Research OR Conservation and Management Application

NOTE: If land or marine archeological activities are involved, please contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, please contact the Monument office on the first page of this application.

1a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name: 1. Hawaiian monk seal
2. Cetaceans: See table below

Scientific name: 1. *Monachus schauinslandi*
2. Cetaceans: See table below

& size of specimens:

Hawaiian monk seal specimens to be collected during instrument deployment (15 MK10 Satellite Link GPS Dive Recorders) or flipper-tagging efforts on weanling and other untagged individuals.

15 x 2 (per animal) blubber biopsies (approx. 0.6 cm diameter, 2-3 cm in length)
15 blood samples (up to 90 mL)
15 swabs x 5 orifices (anal, genital, mouth, nose, eye)
15 fecal samples
50 Scats opportunistically collected on beach
Up to 20 x 2 skin plugs from flipper tagging efforts of weanlings and adults

There is also the possibility of conducting necropsies on any dead seals found during research activities. The type and number of samples collected during necropsies varies depending on the condition of the carcass. A necropsy protocol that highlights the potential tissues that may be collected from dead monk seals can be provided upon request, though tissues could include: samples from all major organs, skin, muscle, blood, blubber, hair, bone and other.

Collection location:

Hawaiian monk seals
Pearl and Hermes Reef

☒ Whole Organism ☒ Partial Organism

Cetacean samples

Common names: See table below

Scientific name: See table below

Common name	**Scientific name**	**# biopsy samples**	**MMPA / ESA status**	**CITES Appendix**
Rough-toothed dolphin	*Steno bredanensis*	50		II
Risso's dolphin	*Grampus griseus*	50		II
Bottlenose dolphin	*Tursiops truncatus*	50		II
Pantropical spotted dolphin	*Stenella attenuata*	50		II
Spinner dolphin	*Stenella longirostris*	10		II
Striped dolphin	*Stenella coeruleoalba*	50		II
Fraser's dolphin	*Lagenodelphis hosei*	50		II
Melon-headed whale	*Peponocephala electra*	50		II
Pygmy killer whale	*Feresa attenuata*	50		II
False killer whale[1]	*Pseudorca crassidens*	50		II
Killer whale	*Orcinus orca*	50		II
Short-finned pilot whale	*Globicephala macrorhynchus*	50		II
Blainville's beaked whale	*Mesoplodon densirostris*	50		II
Cuvier's beaked whale	*Ziphius cavirostris*	50		II
Longman's beaked whale	*Indopacetus pacificus*	50		II
Pygmy sperm whale	*Kogia breviceps*	50		II
Dwarf sperm whale	*Kogia sima*	50		II
Sperm whale	*Physeter macrocephalus*	50	D / E	I
Blue whale	*Baleanoptera musculus*	50	D / E	I
Fin whale	*Balaenoptera physalus*	50	D / E	I
Sei whale	*Balaenoptera borealis*	50	D / E	I
Minke whale	*Balaenoptera acutorostrata*	50		I
Bryde's whale	*Balaenoptera edeni*	50		I
North Pacific right whale	*Eubalaena japonica*	10	D / E	I

Humpback whale	*Megaptera novaeangliae*	50	D / E	I

[1]The Hawaii stock is not listed as endangered, threatened nor depleted, but is considered strategic under MMPA as estimated total annual human caused mortality and serious injury exceeds PBR.

& size of specimens:

Cetacean biopsy sample specimens are approximately 5 to 7mm in diameter and 10 to 20mm long. We expect between 10 and 100 biopsy samples to be collected, but this will depend on the number of cetacean encounters.

There is also the possibility of conducting necropsies on any dead cetaceans found during research activities. The type and number of samples collected during necropsies varies depending on the condition of the carcass

Ecosystem observation voucher samples

Prey field samples will include various small fishes (primarily myctophids), crustacean, cnidarian and cephalopod (primarily squid) species (to be identified onboard and/or after the cruise) and each trawl will not collect samples greater than 2L wet volume. This will amount to <25 trawl samples for the entire cruise. All samples will be archived at the PIFSC/Bishop Museum and elsewhere at the Monument's request.

1b. What will be done with the specimens after the project has ended?

Samples will be analyzed in a timely basis upon return to Honolulu (see below). All samples collected and not analyzed during this project (i.e. duplicate blubber for fatty acids, skin for genetics) will be stored at the PIFSC or Bishop Museum for future analysis.

1c. Will the organisms be kept alive after collection? ☐ **Yes** ☒ **No**

• Specific site/location:

• Is it an open or closed system? ☐ Open ☐ Closed

• Is there an outfall? ☐ Yes ☐ No

• Will these organisms be housed with other organisms? If so, what are the other organisms?

• Will organisms be released?

2. If applicable, how will the collected samples or specimens be transported out of the Monument?

All samples collected within the monument will be transported out on the NOAA/RV OES. Blubber and other tissue samples will be stored in a liquid nitrogen dewar. Most tissues will be

stored in ethanol. Skin plugs from monk seals and cetaceans may be stored in DMSO prior to freezing. Fecal samples are stored in buckets and later frozen on the vessel.

3. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

Currently NOAA Fisheries is the only group researching Hawaiian monk seals eliminating duplicative research. As well, there are limited cetacean research programs ongoing in the NWHI. Where these are underway (e.g. spinner dolphin research at Midway), we have ongoing collaborations with those researchers, included in the list below. However, we have several partners aiding us in the analysis of our samples and data. These include: Bishop Museum, University of Hawaii Manoa and Hilo, UH Hawaii Institute of Marine Biology, Southwest Fisheries Science Center, Scripps Institute of Oceanography and Dalhousie University, Canada.

Data collected during this study will also be provided to the Monument to aid with their management objectives.

4a. Gear and materials:

A detailed list of gear and materials being brought into the NWHI Monument is included at the end of this permit.

4b. Please list all Hazardous Materials you propose to take to and use within the Monument:

A detailed list of hazmat being brought into the NWHI Monument is included at the end of this permit. MSDS will be provided on request.

5. Fixed installations and instrumentation:

No fixed installations will be used in these studies.

6. Provide a time line for sample analysis, data analysis, write-up and publication of information:

Hawaiian monk seal samples:

Data collected via satellite tags will undergo some analysis immediately to determine foraging hotspots. The remainder of the data will not be analyzed until all the tags have stopped transmitting or have been recovered. This could be up to 6-8 months. After all the data is collected foraging information will be analyzed and summarized.

Tissue samples will be analyzed at different times. Feces, blubber and other tissues used for diet analysis will be processed and logged within one month of return to Honolulu. They will then be distributed to the appropriate lab for analysis. Other samples should be analyzed within 6 months of collection depending on the workload of partner and contract laboratories. An important point to emphasize is that we do have partners in place to analyze samples and interpret resulting data.

Publication of results will not occur until after at least two field seasons and will likely extend through 2009.

Cetacean Samples:
Line transect, photo-identification, genetics, towed array, fisheries oceanography acoustics data and voucher samples will be analysed during July 2007 - July 2008. Publications in the primary literature will arise during this process, and may extend through 2009.

7. List all publications directly related to the proposed project:

Hawaiian monk seal bibliography:

Draft Hawaiian Monk Seal Recovery Plan:
http://www.nmfs.noaa.gov/pr/pdfs/recovery/draft_hawaiianmonkseal.pdf

Abernathy, K. J. 1999. Foraging ecology of Hawaiian monk seals at French Frigate Shoals, Hawaii. M.S. Thesis, Univ. of Minnesota, Minneapolis, MN, 65 p.

Antonelis, G.A., J.D. Baker, and J.J. Polovina. 2003. Improved body condition of weaned Hawaiian monk seal pups associated with El Niño events: potential benefits to an endangered species. Marine Mammal Science 19(3): 590-598.

Baker, J. D. and T. C. Johanos. 2004. Abundance of the Hawaiian monk seal in the main Hawaiian Islands. Biological Conservation. 116: 103-110.

Baker, J. D., and T. C. Johanos. 2002. Effects of research handling on the endangered Hawaiian monk seal. Mar. Mammal Sci. 18:500-512.

Goodman-Lowe, G. D. 1998. Diet of the Hawaiian monk seal (Monachus schauinslandi) from the Northwestern Hawaiian Islands during 1991-1994. Marine Biology 132:535-546.

Harting, A. L. 2002. Stochastic simulation model for the Hawaiian monk seal. Ph.D. Dissertation. Montana State University, Bozeman, MT, 328 p.

Littnan, C.L., J.D. Baker, F.A. Parrish, and G. J. Marshall. 2004. Evaluation of possible effects of video camera attachment on the foraging behavior of immature Hawaiian monk seals. Mar. Mamm. Sci. 20:345-352.

MacDonald, C. D. 1982. Predation by Hawaiian monk seals on spiny lobsters. J. Mammal. 63:700.

Parrish, F.A., Boland, R.C. 2004. Habitat and Reef-Fish Assemblages of Bank Summits in the Northwestern Hawaiian Islands. Mar Bio. 144:1065-1073.

Parrish, F. A., K. Abernathy, G. J. Marshall, B. M. Buhleier, 2002. Hawaiian monk seals (*Monachus schauinslandi*) foraging in deepwater coral beds. Mar. Mamm. Sci. 18:244-258.

Parrish, F. A., M. P. Craig, T. J. Ragen, G. J. Marshall, and B. M. Buhleier. 2000. Identifying diurnal foraging habitat of endangered Hawaiian monk seals using a seal-mounted video camera. Mar. Mamm. Sci. 16:392-412.

Parrish, F. A., G. J. Marshall, C.L. Littnan, M. Heithaus, S. Canja, B. L. Becker, R. C. Braun, and G. A. Antonelis. 2005. Foraging of juvenile monk seals at French Frigate Shoals, Hawaii. Marine Mammal Science 21(1):93-107.

Stewart, B. S. 2004*a*. Geographic patterns of foraging dispersion of Hawaiian monk seals (*Monachus schauinslandi*) at the Northwestern Hawaiian Islands. Pacific Islands Fisheries Science Center Admin. Rep. H-04-05C.

Stewart, B. S. 2004*b*. Foraging ecology of Hawaiian monk seals (*Monachus schauinslandi*) at Pearl and Hermes Reef, Northwestern Hawaiian Islands: 1997-1998. Pacific Islands Fisheries Science Center Admin. Rep. H-04-03C.

Stewart, B. A., G. A. Antonelis, J. D. Baker, and P. Y. Yochem. In press. Foraging biogeography of the Hawaiian monk seal in the Northwestern Hawaiian Islands. Third NWHI Scientific Symposium, Honolulu, Hawaii. Atoll Research Bulletin.

Stewart, B. S. and P. K. Yochem. 2003. Dispersion and foraging ranges of Hawaiian monk seals (*Monachus schauinslandi*) near Lisianski and Midway Islands: 2000 & 2001. HSWRI Technical Report 2003-322: 1-106.

Stewart, B. S., and P. K. Yochem. 2004*a*. Dispersion and foraging of Hawaiian monk seals (*Monachus schauinslandi*) near Lisianski and Midway Islands: 2000-2001. Pacific Islands Fisheries Science Center Admin. Rep. H-04-04C.

Stewart, B. S., and P. K. Yochem. 2004*b*. Use of marine habitats by Hawaiian monk seals (*Monachus schauinslandi*) from Laysan Island: Satellite-linked monitoring in 2001-2002. Pacific Islands Fisheries Science Center Admin. Rep. H-04-02C.

Stewart, B. S., and P. K. Yochem. 2004*c*. Use of marine habitats by Hawaiian monk seals (*Monachus schauinslandi*) from Kure Atoll: Satellite-linked monitoring in 2001-2002. Pacific Islands Fisheries Science Center Admin. Rep. H-04-02C.

Cetacean bibliography:

Moore, S. E., K. M. Stafford, D. K. Mellinger and J. A. Hildebrand.2006. Listening for large whales in the offshore waters of Alaska. BioScience 56: 49-55.

Barlow, J. 2006. Cetacean abundance in Hawaiian waters estimated from a summer/fall survey in 2002. Marine Mammal Science 22: 446-464.

DID YOU INCLUDE THESE?

☒ Material Safety Data Sheets for Hazardous Materials

Will include if requested.

Additional Information

Equipment, Materials and HAZMAT to be brought into the NWHI Monument:

Communications

Radios/GPS

3	VHF radios
2	VHF battery charger
1	GPS w/ spare set of batteries
1	Fixed mount radio for office tent
1	Radio antenna for office tent
1	clear case for GPS
1	Garmin GPS for zodiac

Sat Phone

1	Satellite Phone
2	sat phone charger (AC and DC, 1 ea/phone)
1	phone to computer chord (1/phone)
1	extra batteries
1	mast antenna
1	PVC pole to mount mast antenna
1	phone card adapter

Power Systems

1	Solar Panel Unit (includes two panels w/ hardware)
1	Solar Panel Mounting PVC Pole
1	Solar Panel Mounting Bracket and bolts
3	12 Volt battery
8	Battery cables (4 red, 4 black)
1	~6 f wire for direct solar to battery connection
3	Cig. lighter (female) to Battery connections
1	Power Box / Regulator
1	Cig. lighter (female) to Power Box connections
2	DC to AC Inverters

Spare Parts:

assort.	Electrical Connections (Butt ends, ring terminals..)
misc.	Shrink wrap 3/8 ", 1/4"
2	Cig. lighter Sockets
12	Fuses 'car fuse' (10, 15 AMPS - 6 ea)
4	Perko plugs (2 female, 2 male)
5	Fuses for tent radio (250V/6A)
1	voltmeter

Data and Tagging

3	Metal clipboards
1	Thermometer
3	camelbacks
4	Dry bags - 3 small, 1 large yellow
2	Bottles for Alcohol & Betadine
1	File, Round -for sharpening punch tips

Emergency Equipment

1	Emergency Pelican
2	Generators
1	Generator supply bucket
1	Grey Tool Kit
1	debris tool bucket
3	Binos
3	Cameras w/accessories
1	First off bucket
1	tent repair kit
1	PHR Zodiac and gear
1	FFS whaler (or new Avon) and gear
2	boat tool kits
1	office supplies

Kitchen Supplies

1	Coleman Kitchen Table
1	Drinking Jug, 5 gal
1	Stove, cast iron
1	Oven, collapsible
3	Propane regulator & hose (Stove)
2	Fire Extinguisher
30	Water Jugs, 6 gal
20/10	Trash bags, Large / Xlarge
50	Ziplock bags, S / M / L (50 ea.)
1	Foil
1	Plastic wrap
3	Hot pads
4	Dish towels
2	Paper towels
5	Scrubbies & Sponges (misc)
1	Kitchen Action Packer
	8 sets dishes, cups, utensils

Living Amenities

8	Foam pads
8	Sleeping bags
8	Pillows
8	Sand chairs
4	Seat cushions
1	Toilet seat
3	Tarp, Large
3	Tarp, Medium
1	Lg. Broom w/ dustpan
1	Whisk broom w/ dust pan
1	Dry erase board
4	Tables, 2 med, 2 lg
1 set	1/2" Plywood for latrine (3 sides, 1 top)

2	Leather Punch
7	Leather Punch, Replacement Tips
2	Nail Brush
10	Pit Tags and 4 punches
40	Q-Tips
1	Soap, Waterless Antibacterial (large size)
3	Personal size, waterless antibacterial soap
1	Spray Bottles for bleach
1	Tag Reader
8	Tag Reader, AA Batteries
1	Tape Measure
1	Tupperware for Pit Tag
1	Tweezers for tissue plugs
3	Bleach Dispensing Bottles w/ lines
2	Backpacks (1 Large / 3 Daypacks)
2	Hoop net and poles
	hoop net: 3 poles, 1 connector
1	Streacher net
8	Coveralls
8	Gloves
2	Kneepads
1	scale
1	weighing pole
	tags
	Cetacean data equipment

HAZMAT

FLAMMABLES

Boating

1	Corrosion Block
1	Epoxy Cement
2	EZ Store Fuel Stabilizer
1	Boat Oil
2?	Gas, 55 gal drums
1	Grease, Silicon
2	Marine Sealant / Silicon Sealer
1	Marine Tex
1 gal	Ospho Rust Remover
1	Permatex
1	Resin
1	Silicone Lubricant
2	WD-40/LPS

Generator

1	Carburator Cleaner
1	Lead Substitute
2	Motor Oil, Quart (SAE 10W-40)

Propane

1	Propane tank, 40 lb
1	Propane tank, 20 lb
2	Propane tank, 1 lb

Insecticide

2	Tick Repellant
1	Insecticide
3	Bug bombs

8	Towels Sets: Bath Towel/Face Cloth (2 sets/ per)
30	Toilet paper (1 roll/3 days)
5 lbs	Lime for L.D.
2	propane lantern
1	lantern tree
5	fluorescent lanterns
20	lantern batteries
3	Sunscreen, SPF 30, 6 oz. (.5/per/wk)
5	Sunscreen, SPF 50, 6 oz. (.5/per/wk)
2	Joy liquid soap
5	Campsuds, 16 oz (.2/per/wk)
3	Flashlights
6 sets	Flashlight batteries
5	Lighters
2	Matches 250/box
2 pkg	Clothes pins
3	fly swatters
2	ant traps

Medication

1	O2 Kit
1	IV Kit
1	Crash Kit
1	Large Med pelican

Tents

1	Large 9' x 13' tent
1	Large Fly 13' x 21'
1	Ridge pole (1 / tent + spare)
4	Ridge pole support (2 / tent + spare set)
24	Wall poles 5' (12 / tent + spare set)
6	Extendable aluminum poles
40	Set of stakes for tent/fly (40 / tent)
1	Small 8 x 8 tent
1	Small Fly
1	Ridge pole
2	Ridge pole support
8	Wall poles
20	Set of stakes for tent/fly (20 / tent)
4	small pup tents

Tagging
Epoxy for tags
acetone
CORROSIVES Pack each corrosive 'type' separately!
Animal Handling
20 Clorox
50 Developer, Clairoxide 20 Vol.
Instant Whip
Lightening Activators (envelopes)

1 **SPILL KIT**